

SILICON CARBIDE POWER METAL-OXIDE SEMICONDUCTOR FIELD  
EFFECT TRANSISTORS HAVING A SHORTING CHANNEL AND METHODS  
OF FABRICATING SILICON CARBIDE METAL-OXIDE SEMICONDUCTOR  
FIELD EFFECT TRANSISTORS HAVING A SHORTING CHANNEL

5

**Abstract of the Disclosure**

Silicon carbide metal-oxide semiconductor field effect transistors (MOSFETs)  
and methods of fabricating silicon carbide MOSFETs are provided. The silicon  
carbide MOSFETs have an n-type silicon carbide drift layer, spaced apart p-type  
silicon carbide regions in the n-type silicon carbide drift layer and having n-type  
10 silicon carbide regions therein, and a nitrided oxide layer. The MOSFETs also have  
n-type shorting channels extending from respective ones of the n-type silicon carbide  
regions through the p-type silicon carbide regions to the n-type silicon carbide drift  
layer. In further embodiments, silicon carbide MOSFETs and methods of fabricating  
silicon carbide MOSFETs are provided that include a region that is configured to self-  
15 deplete the source region, between the n-type silicon carbide regions and the drift  
layer, adjacent the oxide layer, upon application of a zero gate bias.